

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P931039

Luminaire Tested: DFN2DS-SQ3F0-110DS930-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931039  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333812)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-SQ3F0-110DS930-FLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

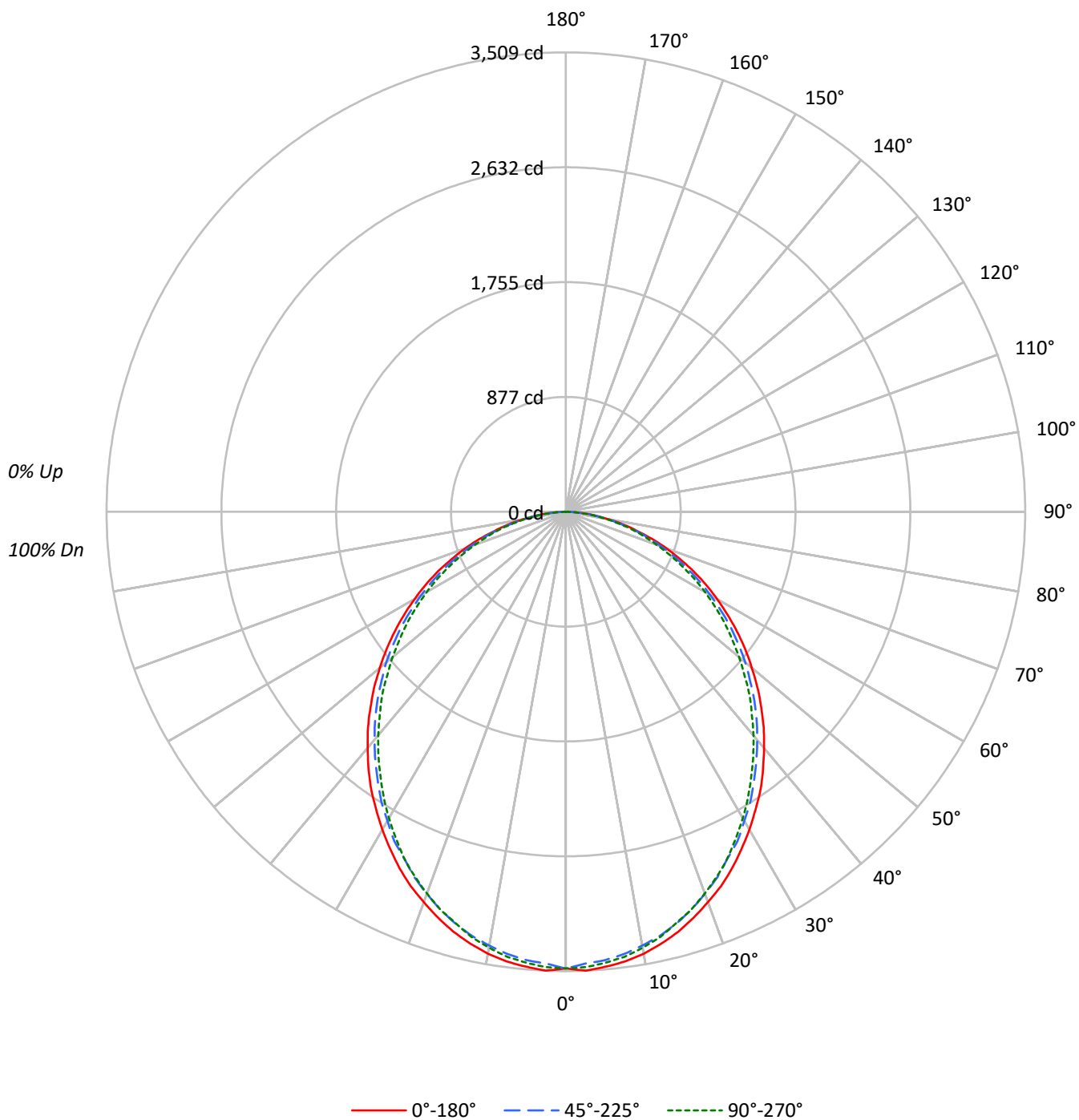
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8875.4 lumens  
Efficiency: N/A  
Efficacy: 75.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.06' x L: 3.06' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 117.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|-----|-----|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |     |     |     |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 10  |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  | 30  | 10  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 | 102 | 102 | 100 |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  |  | 94  | 91  | 89  |  | 90  | 88  | 86  | 84  |
| 2   | 99  | 91  | 85  | 79  | 97  | 89  | 83  | 78  | 86  | 81  | 76  |  | 83  | 78  | 74  |  | 80  | 76  | 73  | 71  |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  |  | 73  | 68  | 63  |  | 71  | 66  | 62  | 60  |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  |  | 65  | 59  | 54  |  | 63  | 58  | 54  | 51  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 53  | 48  |  | 59  | 52  | 47  |  | 57  | 51  | 47  | 45  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 48  | 42  |  | 53  | 47  | 42  |  | 52  | 46  | 41  | 39  |
| 7   | 66  | 52  | 44  | 38  | 64  | 52  | 43  | 38  | 50  | 43  | 37  |  | 49  | 42  | 37  |  | 47  | 41  | 37  | 35  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 33  |  | 45  | 38  | 33  |  | 44  | 38  | 33  | 31  |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  |  | 41  | 35  | 30  |  | 40  | 34  | 30  | 28  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 27  |  | 38  | 32  | 27  |  | 37  | 32  | 27  | 26  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3997 | 3997 | 3997 |
| 5°  | 4012 | 3955 | 3978 |
| 10° | 3989 | 3915 | 3934 |
| 15° | 3939 | 3864 | 3860 |
| 20° | 3869 | 3787 | 3783 |
| 25° | 3800 | 3694 | 3694 |
| 30° | 3710 | 3608 | 3577 |
| 35° | 3627 | 3505 | 3453 |
| 40° | 3522 | 3401 | 3337 |
| 45° | 3419 | 3299 | 3218 |
| 50° | 3306 | 3193 | 3079 |
| 55° | 3190 | 3069 | 2955 |
| 60° | 3059 | 2921 | 2814 |
| 65° | 2920 | 2774 | 2647 |
| 70° | 2742 | 2595 | 2473 |
| 75° | 2494 | 2390 | 2332 |
| 80° | 2214 | 2146 | 2036 |
| 85° | 1806 | 1722 | 1543 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3419 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 328.3  | 3.7       |
| 10°-20°   | 923.8  | 10.4      |
| 20°-30°   | 1357.6 | 15.3      |
| 30°-40°   | 1576.7 | 17.8      |
| 40°-50°   | 1574.8 | 17.7      |
| 50°-60°   | 1373.2 | 15.5      |
| 60°-70°   | 1015.1 | 11.4      |
| 70°-80°   | 574.3  | 6.5       |
| 80°-90°   | 151.6  | 1.7       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 2609.7 | 29.4      |
| 0°-40°    | 4186.4 | 47.2      |
| 0°-60°    | 7134.4 | 80.4      |
| 0°-90°    | 8875.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8875.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3488 | 3488  | 3488 | 3488  | 3488 |      |
| 5°  | 3488 | 3475  | 3438 | 3465  | 3458 | 331  |
| 15° | 3321 | 3301  | 3257 | 3270  | 3254 | 935  |
| 25° | 3005 | 2979  | 2922 | 2928  | 2922 | 1383 |
| 35° | 2593 | 2560  | 2506 | 2485  | 2469 | 1619 |
| 45° | 2110 | 2086  | 2036 | 1999  | 1986 | 1628 |
| 55° | 1597 | 1576  | 1536 | 1496  | 1479 | 1428 |
| 65° | 1077 | 1057  | 1023 | 993   | 976  | 1065 |
| 75° | 563  | 557   | 540  | 520   | 527  | 601  |
| 85° | 137  | 134   | 131  | 121   | 117  | 162  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3488.4 | 3488.4 | 3488.4 | 3488.4 | 3488.4 |
| 2.5°  | 3508.6 | 3491.9 | 3454.9 | 3488.4 | 3481.9 |
| 5°    | 3488.4 | 3475.2 | 3438.2 | 3464.8 | 3458.5 |
| 7.5°  | 3464.8 | 3444.9 | 3407.9 | 3435.0 | 3428.2 |
| 10°   | 3428.2 | 3404.7 | 3364.5 | 3391.1 | 3381.2 |
| 12.5° | 3377.7 | 3357.7 | 3317.5 | 3334.2 | 3327.5 |
| 15°   | 3320.7 | 3300.8 | 3257.0 | 3270.5 | 3253.8 |
| 17.5° | 3250.2 | 3230.3 | 3186.6 | 3203.3 | 3186.6 |
| 20°   | 3173.0 | 3153.1 | 3106.1 | 3116.1 | 3102.9 |
| 22.5° | 3096.2 | 3065.9 | 3022.1 | 3022.1 | 3015.3 |
| 25°   | 3005.4 | 2978.7 | 2921.8 | 2928.2 | 2921.8 |
| 27.5° | 2904.7 | 2881.2 | 2837.7 | 2827.8 | 2811.1 |
| 30°   | 2804.3 | 2777.3 | 2727.1 | 2717.1 | 2703.6 |
| 32.5° | 2696.8 | 2676.9 | 2623.2 | 2602.9 | 2589.3 |
| 35°   | 2592.9 | 2559.5 | 2505.7 | 2485.4 | 2468.7 |
| 37.5° | 2475.5 | 2445.2 | 2391.5 | 2368.0 | 2351.3 |
| 40°   | 2354.9 | 2327.8 | 2274.1 | 2244.2 | 2230.7 |
| 42.5° | 2237.4 | 2210.4 | 2157.0 | 2123.2 | 2103.3 |
| 45°   | 2110.0 | 2086.5 | 2036.0 | 1999.4 | 1985.8 |
| 47.5° | 1985.8 | 1962.4 | 1908.6 | 1871.6 | 1851.6 |
| 50°   | 1854.9 | 1838.2 | 1791.1 | 1744.2 | 1727.5 |
| 52.5° | 1727.5 | 1703.9 | 1660.6 | 1623.5 | 1600.0 |
| 55°   | 1596.8 | 1576.5 | 1536.4 | 1496.1 | 1479.4 |
| 57.5° | 1465.9 | 1449.2 | 1405.4 | 1365.1 | 1351.6 |
| 60°   | 1334.9 | 1321.8 | 1274.7 | 1237.7 | 1227.8 |
| 62.5° | 1207.5 | 1184.0 | 1150.5 | 1117.1 | 1103.6 |
| 65°   | 1076.9 | 1056.6 | 1023.2 | 992.9  | 976.2  |
| 67.5° | 942.7  | 925.7  | 895.8  | 872.3  | 858.8  |
| 70°   | 818.5  | 805.0  | 774.7  | 751.3  | 738.1  |
| 72.5° | 691.1  | 677.6  | 660.9  | 637.4  | 627.4  |
| 75°   | 563.3  | 557.0  | 539.9  | 520.0  | 526.7  |
| 77.5° | 449.5  | 435.9  | 429.2  | 419.2  | 409.3  |
| 80°   | 335.6  | 332.0  | 325.3  | 315.3  | 308.6  |
| 82.5° | 228.1  | 228.1  | 224.9  | 211.4  | 211.4  |
| 85°   | 137.4  | 134.1  | 131.0  | 120.6  | 117.4  |
| 87.5° | 60.5   | 53.7   | 46.9   | 37.0   | 33.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 16.10            | 17.71 | 16.46 | 18.02 | 18.34 | 15.65          | 17.26 | 16.02 | 17.58 | 17.89 |
|                 | 3H   | 17.85            | 19.30 | 18.22 | 19.63 | 19.99 | 17.36          | 18.81 | 17.73 | 19.14 | 19.50 |
|                 | 4H   | 18.49            | 19.86 | 18.89 | 20.21 | 20.59 | 18.00          | 19.37 | 18.40 | 19.71 | 20.09 |
|                 | 6H   | 18.96            | 20.23 | 19.37 | 20.60 | 20.99 | 18.46          | 19.73 | 18.87 | 20.09 | 20.48 |
|                 | 8H   | 19.11            | 20.32 | 19.53 | 20.70 | 21.10 | 18.60          | 19.81 | 19.03 | 20.20 | 20.60 |
|                 | 12H  | 19.20            | 20.36 | 19.62 | 20.74 | 21.17 | 18.68          | 19.84 | 19.11 | 20.22 | 20.65 |
| 4H              | 2H   | 16.66            | 18.03 | 17.06 | 18.37 | 18.75 | 16.30          | 17.67 | 16.70 | 18.02 | 18.40 |
|                 | 3H   | 18.63            | 19.78 | 19.04 | 20.18 | 20.58 | 18.23          | 19.37 | 18.63 | 19.77 | 20.17 |
|                 | 4H   | 19.41            | 20.44 | 19.84 | 20.86 | 21.29 | 18.98          | 20.02 | 19.42 | 20.43 | 20.87 |
|                 | 6H   | 20.01            | 20.91 | 20.46 | 21.35 | 21.81 | 19.57          | 20.48 | 20.03 | 20.92 | 21.37 |
|                 | 8H   | 20.19            | 21.04 | 20.66 | 21.48 | 21.95 | 19.76          | 20.60 | 20.22 | 21.05 | 21.51 |
|                 | 12H  | 20.33            | 21.09 | 20.81 | 21.56 | 22.03 | 19.87          | 20.63 | 20.35 | 21.11 | 21.58 |
| 8H              | 4H   | 19.68            | 20.53 | 20.14 | 20.97 | 21.44 | 19.31          | 20.15 | 19.77 | 20.60 | 21.06 |
|                 | 6H   | 20.40            | 21.10 | 20.89 | 21.59 | 22.06 | 20.01          | 20.72 | 20.51 | 21.21 | 21.68 |
|                 | 8H   | 20.66            | 21.29 | 21.17 | 21.79 | 22.28 | 20.26          | 20.89 | 20.77 | 21.40 | 21.89 |
|                 | 12H  | 20.86            | 21.41 | 21.36 | 21.90 | 22.46 | 20.44          | 21.00 | 20.95 | 21.49 | 22.05 |
| 12H             | 4H   | 19.71            | 20.47 | 20.19 | 20.94 | 21.41 | 19.34          | 20.10 | 19.82 | 20.58 | 21.05 |
|                 | 6H   | 20.44            | 21.07 | 20.95 | 21.58 | 22.07 | 20.07          | 20.70 | 20.58 | 21.21 | 21.70 |
|                 | 8H   | 20.76            | 21.31 | 21.26 | 21.80 | 22.36 | 20.38          | 20.94 | 20.88 | 21.43 | 21.99 |